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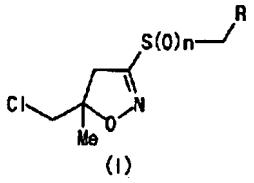
(54)【発明の名称】　除草性イソオキサゾリン誘導体

(57)【要約】
【課題】優れた除草活性を有する新規な２－イソオキサゾリン誘導体を見出すこと。
【解決手段】一般式（Ｉ）
【化１】



(I)

［Ｒ＝フリル基、チエニル基、イソオキサゾリル基等、ｎ＝０、１、２］で表わされる化合物。

P,09-328483,A(1997)]

Japanese (PDF) | File Wrapper Information

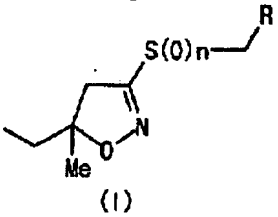
ULL CONTENTS CLAIM + DETAILED DESCRIPTION
ECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION
ECHNICAL PROBLEM MEANS EXAMPLE

Translation done.]

anslated: 02:03:26 JST 10/24/2007
ctionary: Last updated 10/12/2007 / Priority: 1. Biotechnology / 2. Chemistry / 3. JIS
apan Industrial Standards) term

ULL CONTENTS

Claim(s)]
Claim 1] Following general formula (I)
Formula 1]



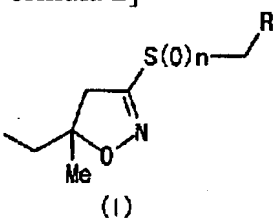
(I)

among [type A pyridyl machine, a furil machine, a thienyl group, an iso
xazolyl machine, a thiazolyl machine, a thiadiazolyl machine, a
enzothiazolyl machine, or a benzofuril machine (the pyridyl machine
oncerned --) a furil machine, a thienyl group, an iso oxazolyl machine, a
iazolyl machine, a thiadiazolyl machine, a benzothiazolyl machine, and
benzofuril machine are replaced by 1 [same or different] or two same or
fferent substituents which are chosen from the following substituent
oup a -- **** -- it is shown and n shows 0, 1, or 2.
a) Substituent group) The compound expressed with halogen atom, low-
ade alkyl-group, and lower alkoxy group].
Claim 2] The compound according to claim 1 whose n is 2.
Claim 3] The compound according to claim 1 or 2 whose substituent

[Translation done.]

oups a are a chlorine atom, a methyl group, and a methoxy group.
laim 4] The compound according to claim 1 to 3 whose R is a furil achine, a thienyl group, or an iso oxazolyl machine.

Detailed Description of the Invention]
001]
ield of the Invention] This invention relates to the new iso oxazoline ductor which has the outstanding weeding-out activity.
002]
Description of the Prior Art] The compound which has the 2-iso azoline frame which has weeding-out activity is indicated to P334120A1 and EP514987A1 until now.
003] However, a compound given in EP334120A1 is a compound whose bstituents of the 3rd place of a 2-iso oxazoline ring are alkyl, cycloalkyl, substitution phenyl, 5 members, and 6 member heterocycle. Structure mpletely differs from the application-concerned compound whose bstituents of the 3rd place of a 2-iso oxazoline ring are a sulfide, lfoxide, and sulfone. Moreover, the substituent of the 3rd place of a 2-o oxazoline ring is only the compound which is a substitution phenyl oup, and a compound given in EP514987A1 completely differs in ructure from an application-concerned compound too.
004] Furthermore, although the compound which has a 2-iso oxazoline ng is indicated to JP,H5-105672,A, the substituent of the 5th place of an o oxazoline ring is the compound which is a cyano group, and all of ese compounds completely differ on this point application-concerned mpound and structure. Furthermore, to the JP,H5-105672,A concerned, eeding-out activity is not indicated at all.
005]
roblem(s) to be Solved by the Invention] The known compound found it having the weeding-out activity which differed in structure and which as excellent in the new 2-iso oxazoline inductor, and this invention rson etc. completed this invention, as a result of continuing for years id inquiring wholeheartedly about synthesis and biological activity of the ductor which has a 2-iso oxazoline ring.
006]
lements of the Invention]
007]
Means for Solving the Problem] This invention is a following general rmula (I).
008]
ormula 2]



(I)

)009] R among [type A pyridyl machine, a furil machine, a thienyl group, ı iso oxazolyl machine, a thiazolyl machine, a thiadiazolyl machine, a :nzothiazolyl machine, or a benzofuril machine (the pyridyl machine)ncerned --) a furil machine, a thienyl group, an iso oxazolyl machine, a iazolyl machine, a thiadiazolyl machine, a benzothiazolyl machine, and benzofuril machine are replaced by 1 [same or different] or two same or fferent substituents which are chosen from the following substituent oup a -- **** -- it is shown and n shows 0, 1, or 2.
)010] ((a) Substituent group) It is the compound expressed with halogen om, low-grade alkyl-group, and lower alkoxy group].
)011] In an application concerned, "halogen atoms" is a fluorine atom, a ılorine atom, a bromine atom, and iodine atom. In the substituent group it is a fluorine atom and a chlorine atom suitably, and is a chlorine atom ill more suitably.
)012] In an application concerned, with a "low-grade alkyl group", for :ample Methyl, ethyl, n-propyl, Isopropyl, n-butyl, isobutyl, s-butyl, t-ıtyl, n-pentyl, isopentyl, 2-methylbutyl, neopentyl one, 1-ethyl propyl, n-:xyl, 4-methyl pentyl, 3-methyl pentyl, 2-methyl pentyl, They are the raight chain of 1 to 6 carbon numbers like 1-methyl pentyl, 3, and 3-methyl butyl, 2, and 2-dimethyl butyl, 1, and 1-dimethyl butyl, 1, 2-methyl butyl, 1, 3-dimethyl butyl, 2, 3-dimethyl butyl, and 2-ethyl butyl, · a branched chain alkyl group. In the substituent group a, it is the raight chain of 1 to 3 carbon numbers, or a branched chain alkyl group ıitably, and is a methyl group still more suitably.
)013] In an application concerned, with a "lower alkoxy group", for :ample Methoxy and ethoxy ** n-propoxy, isopropoxy, n-butoxy, iso ıtoxy, s-butoxy, t-butoxy, n-pentyloxy, isopentyloxy, 2-methyl butoxy, eopentyl oxy-**1-ethyl propoxy, n-hexyloxy, 4-methyl pentyloxy, 3-ethyl pentyloxy, 2-methyl pentyloxy, 1-methyl pentyloxy, 3, and 3-methyl butoxy, 2, and 2-dimethyl butoxy, They are the straight chain of to 6 carbon numbers like 1 and 1-dimethyl butoxy, 1, 2-dimethyl butoxy, 3-dimethyl butoxy, 2, - dimethyl butoxy, and 2-ethyl butoxy, or a anched chain alkoxy group. In the substituent group a, it is the straight ıain of 1 to 3 carbon numbers, or a branched chain alkoxy group, and is a ethoxy group most suitably.
)014] The compound (I) of this invention has an asymmetric carbon om. In the invention in this application, the mixture in each optically :tive substance itself and those arbitrary rates is also included.
)015] The compound (I) of this invention can be used as a salt, and those ılts are also included by this invention.
)016] [use / it / as agricultural chemicals] as such a salt Or if it can be ;ed as an intermediate product of medicine and agricultural chemicals, ere will be no limitation in particular, but suitably Sodium salt, an alkali etal salt like potassium salt; Calcium salt, Metal salts, such as alkaline ırth metal salt like magnesium salt; Guanidine salt, A triethylamine salt, ı organic base salt like a dicyclohexylamine salt; A hydrofluoric acid ılt, A hydrochloride, a hydrobromic acid salt, a halide acid salt like a /droiodic acid salt; Nitrate, A perchlorate, a sulphate, an inorganic acid ılt like a phosphate; Methanesulfon acid chloride, Trifluoro

ethanesulfon acid chloride, low-grade alkane sulfonate like an ethane-
ılfonic-acid salt; A benzenesulfonic acid salt, Aryl sulfonate like a p-
luenesulfonic acid salt; amino acid salt like organic acid salt; and
utamate like fumarate, succinate, citrate, a tartrate, an oxalate, and
aleate, and an aspartic acid salt can be mentioned.

017] The hydrate of this invention compound is also included by the
vention in this application.

018] In a general formula (I), suitably, R is a furil machine, a thienyl
oup, an iso oxazolyl machine, a thiazolyl machine, a thiadiazolyl
achine, a benzothiazolyl machine, or a benzofuril machine, and is a furil
achine, a thienyl group, or an iso oxazolyl machine still more suitably.

019] In R, a pyridyl machine is 2-pyridyl machine or 3-pyridyl machine
ıitably.

020] In R, a furil machine is 2-furil machine suitably.

021] In R, a thienyl group is a 2-thienyl group suitably.

022] In R, an iso oxazolyl machine is a 4-iso oxazolyl machine suitably.

023] In R, a thiazolyl machine is 5-thiazolyl machine suitably.

024] In R, a benzothiazolyl machine is 2-benzothiazolyl machine
ıitably.

025] In R, a benzofuril machine is a 2-benzofuril machine suitably.

026] In a general formula (I), n is 2 suitably.

027] The substituent groups a are a chlorine atom, a methyl group, and a
ethoxy group suitably.

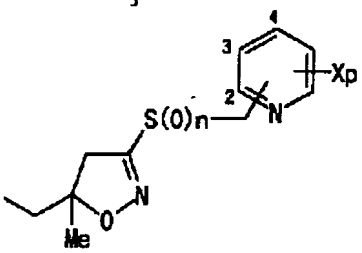
028] Although the representation compound of this invention is
ustrated to the following tables 1-9, this invention is not limited to these
)mpounds.

029] Me shows a methyl group among front, Xp shows the substituent
ı R, and a number shows the substitution position on R.

030] In addition, what that it is in the column of Xp with "-" did not
place is shown among Table 1-9.

031]

ormula 3]

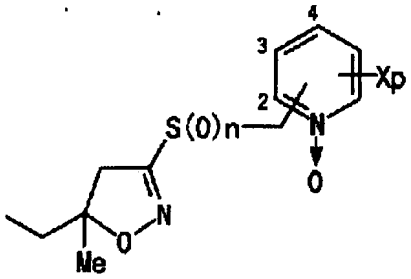


032]

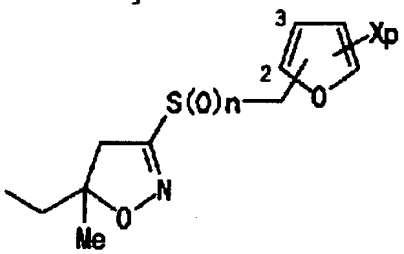
able 1]

---------- Compound number The substitution position pn of R ---------- 1.12-0 1.22-2 1.33-0 1.43-2 1.54- 0 6 4 - 2 ---------- [0033]

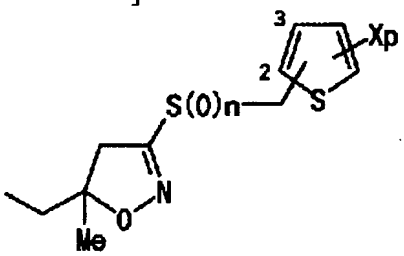
ormula 4]



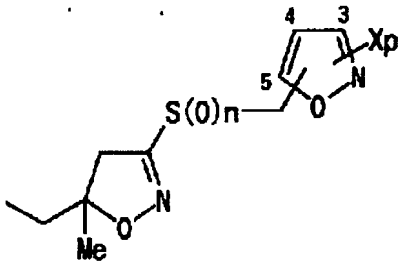
)034]
'able 2]
---------- Compound number The substitution position pn of R ---------- 2.12-2 2.23- 2 2.3 4 - 2 ---------- [0035]
'ormula 5]



)036]
'able 3]
---------- Compound number The substitution position pn of R ---------- 3.12-0 3.223-Me0 3.324-Me0 3.425-[e0 3.523-OMe0 3.6 2 4-OMe 0 3.7 2 5-OMe 0 3.82-2 3.923-Me2 1024-Me2 3.1125-Me2 3.1223-OMe2 3.1324-OMe2 3.1425-OMe 2 3.15 - 0 3.16 3 2-Me0 3.1734-Me0 3.1835-Me0 3.1932-OMe0 3.2034-OMe0 2135-OMe0 3.223-2 3.233 2-Me 2 3.24 3 4-Me 2 3.25 35-Me2 3.2632-Me2 3.2734-OMe 2 3.28 3 5-OMe 2 ---------- [0037]
'ormula 6]



)038]
'able 4]
---------- Compound number The substitution position pn of R ---------- 4.12-0 4.223-Me0 4.324-Me0 4.425-[e0 4.523-OMe0 4.6 2 4-OMe 0 4.7 2 5-OMe 0 4.82-2 4.923-Me2 1024-Me2 4.1125-Me2 4.1223-OMe2 4.1324-OMe2 4.1425-OMe 2 4.15 - 0 4.16 3 2-Me0 4.1734-Me0 4.1835-Me0 4.1932-OMe0 4.2034-OMe0 2135-OMe0 4.223-2 4.233 2-Me 2 4.24 3 4-Me 2 4.25 35-Me2 4.2632-Me2 4.2734-OMe 2 4.28 3 5-OMe 2 ---------- [0039]
'ormula 7]

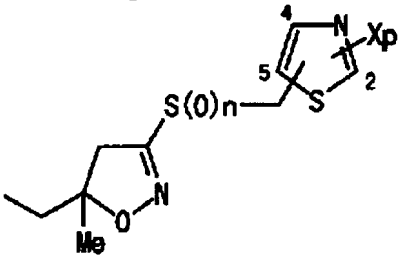


)040]

'able 5]

---------- Compound number The substitution position pn of R ---------- 5.13-0 5.234-Me0 5.335-Me0 5.434-Me0 5.535-OMe0 5.6 3 4-Cl 0 5.7 3 5-Cl 0 5.83-2 5.934-Me2 5.1035-[e2 5.1134-OMe2 5.1235-OMe2 5.1334-Cl2 5.1435-Cl 2 5.15 4 - 0 5.16 3-Me0 5.1745-Me0 5.1843 and 5-Me20 5.1943-OMe0 5.2045-OMe0 2143-Me, 5-OMe0 5.2243-OMe, 5-Me0 5.234 3-Cl 0 5.24 4 5-Cl 0 5.25 3, 5-Cl20 5.264-2 5.2743-Me2 5.2845-Me2 5.2943, 5-Me22 5.3043-Me2 5.3145-OMe2 5.32 4 3-Me,5-OMe 2 5.33 4 3-OMe,5-Me 2 5.3443-l2 5.3545-Cl2 5.3643, 5-Cl22 5.375-0 5.3853-Me0 5.3954-Me0 5.4053-Me 0 5.41 5 4-OMe 0 5.42 5 3-Cl0 5.4354-Cl0 5.445-2 5.4553-Me2 4654-Me2 5.4753-OMe2 5.48 " ** 4-OMe2 5.495 3-Cl 2 5.50 5 4-Cl 2 --------- ---------- [0041]

'ormula 8]

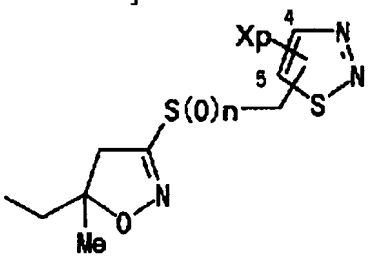


)042]

'able 6]

---------- Compound number The substitution position pn of R ---------- 6.12-0 6.224-Me0 6.325-Me0 6.424, ·Me20 6.524-OMe0 6.6 2 5-OMe 0 6.7 2 - 2 6.824-Me2 6.925-Me2 1024, 5-Me22 6.1124-OMe2 6.1225-OMe2 6.134-0 6.1442-Me 0 6.15 4 ·Me 0 6.16 4 2, 5-Me20 6.1742-OMe0 6.1845-OMe0 6.194-2 6.2042-[e2 6.2145-Me2 6.2242, 5-Me22 6.234 2-OMe 2 6.24 4 5-OMe 2 6.25 5-6.2652-Me0 6.2754-Me0 6.2852, 4-Me20 6.2952-OMe0 6.3054-OMe0 315-2 6.32 5 2-Me 2 6.33 5 4-Me 2 6.3452, 4-Me22 6.3552-OMe 2 6.36 4-OMe 2 ---------- [0043]

'ormula 9]

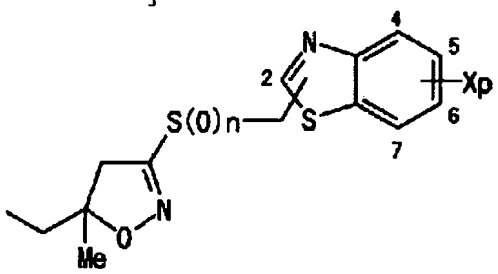


)044]

Table 7]

---------- Compound number The substitution position Xn R ---------- 7.14-0 7.245-Me0 7.345-OMe0 7.445-Cl0 54-2 7.6 4 5-Me 2 7.7 4 5-OMe 2 7.845-Cl2 7.95-0 7.1054-Me0 7.1154-Me0 7.1254-Cl0 7.135-2 7.1454-Me 2 7.15 5 4-OMe 2 7.16 5 4-Cl 2 ---------- [0045]

Formula 10]

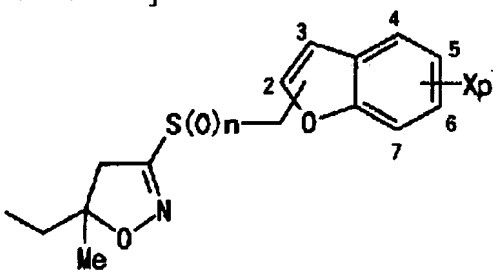


0046]

Table 8]

---------- Compound number The substitution position pn of R ---------- 8.12-0 8.224-Me0 8.325-Me0 8.426-Me0 8.527-Me0 8.6 2 4-OMe 0 8.7 2 5-OMe 0 8.826-OMe0 8.927-OMe0 1024-Cl0 8.1125-Cl0 8.1226-Cl0 8.1327-Cl0 8.142- 2 8.15 2 4-Me 2 16 2 5-Me2 8.1726-Me2 8.1827-Me2 8.1924-OMe2 8.2025-OMe2 2126-OMe2 8.2227-OMe2 8.232 4-Cl 2 8.24 2 5-Cl 2 8.25 26-Cl 2 8.26 7-Cl 2 ---------- [0047]

Formula 11]



0048]

Table 9]

---------- Compound number The substitution position pn of R ---------- 9.12-0 9.223-Me0 9.324-Me0 9.42 5-Me0 9.526-Me0 9.6 2 7-Me 0 9.7 2 3-OMe 0 9.8 24-OMe0 9.925-OMe0 1026-OMe0 9.1127-OMe0 9.1223-Cl0 9.1324-Cl0 9.1425-Cl0 9.15 2 6-Cl 0 9.16 2 7-Cl 0 9.172-2 9.1823-Me2 9.1924-Me2 9.2025-Me2 9.2126-Me2 9.2227-Me2 9.2323-OMe 2 9.24 2 4-OMe 2 9.25 2 5-OMe2 9.2626-OMe2 9.2727-OMe2 9.2823-Cl2 9.2924-Cl2 9.3025-Cl2 9.3126-Cl2 9.327-Cl As Inside of Illustration Compound of 2 ---------- ----------

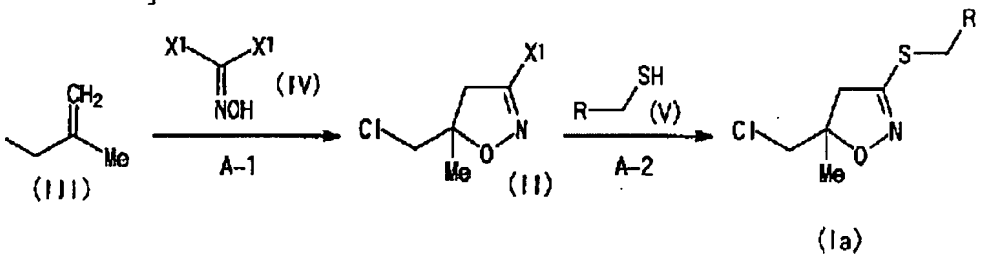
bove, and Suitable Thing, 1. The compound of 2, 1.4, 3.8, 3.22, 3.23, 4.8, 29, 5.33, 6.20, 6.31, 7.13, and 9.17 can be mentioned.

0049] Furthermore, as a suitable thing, the compound of 3.8, 4.8, 5.29, nd 5.33 can be mentioned.

0050]

Embodiment of the Invention] The iso oxazoline inductor which has the eneral formula (I) of this invention can be manufactured by the method indicating below.

)051] A process [0052]
'ormula 12]



)053] The inside of the above-mentioned process and R show the above ıd this meaning, and are X1. A halogen atom is shown. X1 ** -- it is a ılorine atom suitably.
)054] A process is the way n manufactures the compound (Ia) which is 0 . a general formula (I).
)055] A-1 process is a process which manufactures the compound which ıs the general formula (II) which the halogen atom replaced by the 3rd ace of the iso oxazoline ring, and is attained by making the compound hich has a general formula (III) react with the compound which has a :neral formula (IV) in an inactive solvent and under base existence.
)056] A compound (IV), for example In addition, Liebig Anna Wren EMI, It is a compound the 985th page and given in 1989 (Liebigs nnalen der Chemie 985 (1989)), and is manufactured according to a ethod given [concerned] in literature, using a commercial thing.
)057] If it is the base of the strength which generates nitrile oxide from a)mpound (IV) as a base used for A-1 process, although there is no nitation in particular, suitably An alkali metal bicarbonate like sodium carbonate and potassium hydrogencarbonate; Sodium hydroxide, Alkali etal hydroxide like a potassium hydroxide; A calcium hydroxide, An kaline earth metal hydroxide like magnesium hydroxide; Sodium ırbonate, Alkali metal acetate like alkali-metal-carbonate; sodium acetate :e potassium carbonate, and potassium acetate; Sodium fluoride, An kali metal fluorination salt like potassium fluoride; Triethylamine, Third ass low-grade alkylamine;1 like ethyl diisopropylamine and ibutylamine, 8-diazabicyclo [5.4.0] undecane 7-EN (DBU), The third ass alicyclic amines like 1 and 4-diazabicyclo [2.2.2] octane (DABCO) ın be mentioned.
)058] If a reaction is not checked but starting material is dissolved to)me extent as a solvent used, although there is no limitation in particular, ıitably ETEREN glycol wood ether, ethylene glycol JIETERU ether, iethylether, dioxane, ether like tetrahydrofuran; A methylene chloride, hloroform, a carbon tetrachloride, halogenated hydrocarbon; benzene :e dichloroethane, aromatic hydrocarbon; ethyl acetate like toluene, the ırtially aromatic solvent of the nitrile; above-mentioned organic solvent ıd water like acetic acid ester; acetonitrile like butyl acetate; water can be entioned.
)059] although reaction temperature and reaction time change with kinds a raw material compound, a solvent, and base -- reaction temperature -- ;ually -- 0 degree C -- or -- 150 degrees C is 15 degrees C or 80 degrees suitably -- reaction time -- usually -- 15 minutes -- or it is 30 minutes or

hours suitably for 24 hours.

)060] A-2 process is a process which manufactures the compound which ıs a general formula (Ia), and is attained among an inactive solvent by aking it react using a base with the compound which has the general ırmula (II) which manufactured the mercaptan compound which has a :neral formula (V) according to A-1 process.

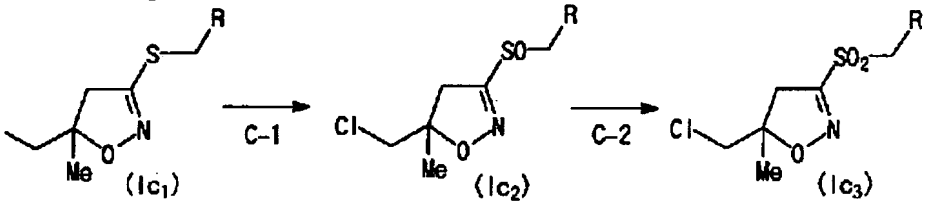
)061] If it is the base of the strength from which the proton of thiols is :sorbed preferentially as a base used, although there is no limitation in ırticular, suitably Sodium hydride, potassium hydride, an alkali metal ydride like lithium hydride; Sodium methoxide, Sodium ethoxide, alkali etal alkoxide like potassium t-butoxide; Sodium amide, Alkali metal nide like lithium isopropyl amide; Triethylamine, Third class low-grade kylamine;1 like ethyl diisopropylamine and tributylamine, 8-azabicyclo [5.4.0] undecane 7-EN (DBU), The third class alicyclic nines like 1 and 4-diazabicyclo [2.2.2] octane (DABCO) can be entioned.

)062] If a reaction is not checked but starting material is dissolved to ıme extent as a solvent used, although there is no limitation in particular, ıitably Dioxane, ether like tetrahydrofuran; A methylene chloride, hloroform, a carbon tetrachloride, and the halogenated hydrocarbon like chloroethane; Benzene, Aromatic hydrocarbon;N like toluene, N-methylacetamide, N, N dimethylformamide and the amide like N-methyl pyrrolidinone; Methanol, Ethanol, propanol, isopropanol, a butanol, obutanol, Alcohols; acetone like t-butanol, and the nitrile like ketone; :etonitrile like 2-butanone; sulfoxide [like dimethyl sulfoxide]; and ese partially aromatic solvents can be mentioned.

)063] although reaction temperature and reaction time change with kinds a raw material compound, a solvent, and base -- reaction temperature -- ıually -- 0 degree C -- or -- 150 degrees C is 0 degree C or 80 degrees C ıitably -- reaction time -- usually -- 15 minutes -- or it is 30 minutes or 8 ɔurs suitably for 24 hours.

)064] C process [0065]

ormula 13]



)066] R and m show the above and this meaning among the above-entioned process.

)067] C process is the method of manufacturing the compound (Ic2) hose n is 1, and the compound (Ic3) whose n is 2 in a general formula (I) a general formula (I).

)068] C-1 process and C-2 process are processes which manufacture the ɔmpound which has a general formula (Ic2), and the compound which ıs a general formula (Ic3), and are attained among an inactive solvent ;ing an oxidizing agent by oxidizing the compound (Ic1) whose n is 0 in general formula (I).

)069] A compound (Ic1) is manufactured by the above-mentioned A

·ocess.
)070] If it is the oxidizing agent of the strength which can oxidize in ılfides and sulfoxide as an oxidizing agent used, although there is no ınitation in particular, suitably Organic peroxide like m-chloro ɛrbenzoic acid, performic acid, and peracetic acid; an inorganic peroxide ɛe hydrogen peroxide, potassium permanganate, and periodic acid ›dium can be mentioned.
)071] Although 1.0 to 1.1Eq of C-1 and C-2 processes are used to a ıbstrate, an oxidizing agent is attained by using 2.0 to 3.0Eq of oxidizing ɛents to a compound (Ic1), in order to obtain sulfone (Ic3) directly, ithout isolating in sulfoxide (Ic2).
)072] If a reaction is not checked but starting material is dissolved to ›me extent as a solvent used, although there is no limitation in particular, ıitably A methylene chloride, chloroform, a carbon tetrachloride, and the ılogenated hydrocarbon like dichloroethane; Tetrahydrofuran, Dioxane, her; acetone like diethylether, and the ketone like 2-butanone; Methanol, itrile; acetic acid; water like amide; acetonitrile like alcohols;N like hanol and t-butanol, N-dimethylacetamide, N, N dimethylformamide, ıd N-methyl 2-pyrrolidinone; the partially aromatic solvent of water and e above-mentioned organic solvent can be mentioned.
)073] [reaction time] although reaction temperature and reaction time ıange with kinds of a raw material compound, a solvent, an oxidizing ɛent, and purpose compound When an object is a compound (Ic2), reaction temperature] usually, -20 degrees C or the case where it is -5 ɛgrees C or 10 degrees C suitably, and 50 degrees C of objects are ›mpounds (Ic3) -- reaction temperature -- usually -- 0 degree C -- or it is) degrees C or 60 degrees C suitably, and 100 degrees C of reaction time usually for 30 minutes or one day suitably for 15 minutes or two days.
)074] in addition, a compound (Ic2) -- in or (Ic3), when R has the ɛterocyclic structure containing a nitrogen atom or a sulfur atom, in C ·ocess, the nitrogen atom or sulfur atom within oxidization of sulfides or ılfoxide, simultaneously heterocycle may also oxidize
)075] The purpose compound of each process is extractable from a action mixture after each above-mentioned end of a reaction process ɛcording to a conventional method. For example, when a reaction ixture is neutralized suitably and an impurity exists, after filtration moves, the organic solvent with which it does not mix with water is ıded, and it is obtained by distilling off a solvent after a flush. If the ›tained purpose compound is required, a conventional method, for ɛample, recrystallization, reprecipitation, or chromatography can refine it ırther.
)076] It mixes with other auxiliary materials a carrier and if needed, and e compound of this invention is used, adjusting to the formulation ɜually used as an herbicide, for example, dust formulation, a coarse ›wder agent, a pellet, a granule, wettable powder, water soluble ıemicals, an emulsion, liquid medicine, etc. A carrier here means the ·nthesis, the natural inorganic matter, or the organic substance mixed in ı herbicide in the attainment nature to the plant of an active substance ›mpound in order to make easy storage of help or an active substance,

ansportation, or handling.

)077] As a suitable solid support, for example A kaolinite group, a ontmorillonite group, Clay, the talc, mica, leaf agalmatolite which are presented with an attapulgite group etc., A pumicite, a vermiculite, ypsum fibrosum, a dolomite, diatomaceous earth, magnesium lime, iosphorus lime, a zeolite, a silicic acid anhydride, synthetic calcium licate, kaoline, Mineral matter, such as a bentonite and calcium irbonate, soybean flour, tobacco powder, walnut powder, Vegetable ganic substances, such as wheat flour, wood flour, starch, and a ystalline cellulose, a cumarone resin, Waxes or urea, such as synthesis of troleum resin, an alkyd resin, a polyvinyl chloride, a polyalkylene ycol, ketone resin, rosin ester, copal gum, dammar gum, etc. or a natural gh molecular compound, Kalna Barrow, a paraffin low, and beeswax, c. can be mentioned.

)078] As a suitable liquid carrier, for example Kerosene, a mineral oil, a indle oil, Paraffin series, such as white oil, or naphthene system ydrocarbon, benzene, Aromatic hydrocarbon, such as toluene, xylene, hylbenzene, cumene, and methylnaphthalene, A carbon tetrachloride, iloroform, trichloroethylene, mono-chlorobenzene, Ether, such as ilorinated hydrocarbons, such as KURORU toluene, dioxane, and trahydrofuran, Acetone, methyl ethyl ketone, diisobutyl ketone, clohexanone, Ketone, such as acetophenone and an isophorone, ethyl etate, amyl acetate, Ethylene glycol acetate, diethylene glycol acetate, ster, such as dibutyl maleate and diethyl succinate, methanol, n-EKISANORU, ethylene glycol, a JIETEREN glycol, cyclohexanol, lcohols, such as benzyl alcohol, ethylene glycol ethyl ether, A polar lvent or water, such as ether alcohol, such as ethylene glycol phenyl her, diethylene glycol ethyl ether, and diethylene glycol butyl ether, methylformamide, and dimethyl sulfoxide, etc. can be mentioned.

)079] Ionicity or nonionic are sufficient as the surface-active agent used r the purpose, such as emulsification, distribution, humidity, a ** hibition, combination, collapsibility regulation, active substance abilization, a fluid improvement, rust prevention, and promotion of sorption to a plant.

)080] As a suitable nonionic surfactant, for example Cane sugar ester of tty acid, The ethyleneoxide polymerization adduct of high-class fatty cohol, such as lauryl alcohol, a stearyl alcohol, and oleyl alcohol, The hyleneoxide polymerization adduct of alkylphenols, such as iso octyl ienol and nonyl phenol, The ethyleneoxide polymerization adduct of kyl naphthols, such as a butyl naphthol and an octyl naphthol, The hyleneoxide polymerization adduct of higher fatty acids, such as a lmitic acid, stearic acid, and oleic acid, Mono-******, such as stearyl iosphoric acid dilauryl phosphoric acid, the ethyleneoxide olymerization adduct of dialkyl phosphoric acid, The copolymer of the gher fatty acid ester, its ethyleneoxide polymerization adduct and hyleneoxide, and the propylene oxide of polyhydric alcohols, such as an hyleneoxide polymerization adduct of high-class fatty amines, such as odecyl amine and octadecanamide, and sorbitan, etc. can be mentioned.

)081] As a suitable anion nature surface-active agent, for example A

)dium lauryl sulfate, Alkyl-sulfuric-acid ester salts, such as oleyl alcohol ılfate amine salt, Sulfo succinic acid dioctyl ester sodium, sodium oleate, lkylaryl sulfonates, such as fatty acid salt, such as sodium stearate, opropyl sodium naphthalenesulfonate, methylene screw sodium ıphthalenesulfonate, lignin-sulfonic-acid sodium, and sodium)decylbenzenesulfonate, etc. can be mentioned.

)082] As a suitable cationic surfactant, high-class fatty amines, ıarternary ammonium salt, alkyl pyridinium salts, etc. can be mentioned, ır example.

)083] [furthermore, the purpose which improves the character of a tablet · the herbicide of this invention, and raises the living thing effect to it] s other ingredients, for example Gelatin, gum arabic, casein, albumin, hixotropy agents, such as high molecular compounds, such as glue,)dium alginate, a polyvinyl alcohol, carboxymethyl cellulose, a ethylcellulose, and a hydroxymethyl cellulose, sodium polyphosphate, ıd a bentonite, and other auxiliary materials may be contained.

)084] In consideration of the drug design application scene of a tablet, an)ove-mentioned carrier and above-mentioned various auxiliary materials e together put independently according to the purpose, respectively, and e used suitably.

)085] dust formulation -- an active substance compound -- usually -- 2 -- · 10 weight part content is carried out and the remainder is a solid ıpport.

)086] wettable powder -- an active substance -- usually -- 10 -- or 80 eight part content is carried out, the remainders are a solid support and a stributed wetting agent, and a protective colloid agent, a thixotropy gent, an antifoam, etc. are added if needed.

)087] a pellet -- an active substance compound -- usually -- 0.1 -- or 10 eight part content is carried out and most of the remainder is a solid ıpport. or the active substance compound is mixed by a solid support and)mogeneity -- or -- ****** -- it adheres or adsorbs uniformly on the ırface of the carrier, and a grained path is about 0.2 or about 1.5mm.

)088] an emulsion -- an active substance -- usually -- 1 -- or 50 weight ırt content is carried out, the emulsion of about 5 or 20 weight parts is)ntained in this, the remainder is a liquid carrier and a rusr-proofer is lded if needed.

)089] Thus, when the germination front stirrup of weeds, for example, ırries out soil treatment of the compound of this invention adjusted to ırious drug designs after germination in a paddy field, 1 to 1000g of eeds can be effectively exterminated by processing 10 or 300g eferably as a 10a per active substance.

)090] Furthermore, when carrying out foliage treatment after soil eatment or germination in front of germination of weeds in Hataji, weeds ın be effectively exterminated by processing 10 or 1 to 1000g 300g eferably as a 10a per active substance.

)091] The herbicide of this invention can be used mixing with other ıtural plant growth regulators, a fungicide, a pesticide, an acaricide, a ematocide, or manure.

)092] Although the work example and the example of a tablet of this

vention herbicide are shown below and being concretely explained to it, is invention is not restricted to these.

093]

xample]

094]

Vork example 1]

chloromethyl 5-methyl 3-(2-pyridyl methyl) ****- 2-iso oxazoline ompound number 1.1) (A process)

) 3-chloro 5-chloromethyl 5-methyl 2-iso oxazoline (A-1 process)

3.2g of 2-hydroxy imino acetic acid and N-chloro succinimide 129.6g ere dissolved in dimethoxyethane 400ml, and it heated and ****(ed) at) degrees C among the oil bath. The oil bath was removed 3 minutes terward and it cooled radiationally to the room temperature. Metallyl loride 48ml, 194.4g of potassium hydrogencarbonate, and 8ml of water ere added to this solution in order, and it ****(ed) at the room mperature for 8 hours. After adding hexane to a reaction solution, ction filtration was carried out using Celite. After distilling off the ganic solvent of filtrate, silica gel column chromatography (hexane: hyl acetate) refined, and 51.6g (64%) of mark compounds were obtained an oily matter.

095] 1 H-NMR (CDCl3) delta: 3.57 (2H, Abq, J= 11.4, deltanu = 5.0Hz), 3.14 (2H, Abq, J= 17.5, deltanu = 76.4Hz) 1.59 (3H, s) ppm (2) chloromethyl 5-methyl 3-(2-pyridyl methyl) ****- 2-iso oxazoline (A-2 ocess)

pyridyl methyl mercaptan 400.0mg was dissolved in tetrahydrofuran nl, 128.0mg of sodium hydride was added little by little 60% at the room mperature, and 3ml of N, N dimethylformamide was added further. bsequently, the mixed solution (3-chloro 5-chloromethyl 5-methyl 2-iso azoline 179.8mg and tetrahydrofuran 2ml) obtained by (1) was added at e room temperature. After ****(ing) at a room temperature for 1 hour d 40 minutes, water was added to the reaction solution, ethyl acetate tracted, saturation saline solution washed the organic layer, and it dried ith anhydrous sodium sulfate. It filtered, silica gel column romatography (hexane: ethyl acetate) refined after distilling off a lvent, and 190.0mg (69.2%) of oily objects were obtained.

096] 1 H-NMR (CDCl3) delta: 8.57 (1H, dd, J= 5.1, 0.9Hz), 7.66 (1H, , J= 7.7, 0.8Hz), 7.42 (1H, d, J= 7.8Hz), 7.23-7.16 (1H, m), 4.38 (2H, s), 51 (2H, d, J= 2.4Hz), The compound manufactured according to the ethod of 36.04 (2H, ABq, J= 16.1, deltanu = 76.3Hz) and 1.53(3H, s) m work examples 1 is shown below.

097] In addition, hereafter, the number of the front in the parenthesis ter a compound name shows the compound number in said tables 1 to 9, d shows a melting point (degree C) as "mp" behind that, or shows that it an oily matter as "oil", and, finally shows a yield (%).

098] 5-chloromethyl 5-methyl 3-(3-pyridyl methyl) ****- 2-iso azoline (1. 3) oil and 49.21 H-NMR (CDCl3) delta: 8.63 (1H, d, J= 9Hz), 8.53 (1H, dd, J= 3.2, 1.7Hz), 7.74 (1H, dt, J= 7.0, 1.7Hz), 7.26 H, d, J= 12.6Hz), 4.24 (2H, s), 3.52 (2H, d, J= 2.1Hz), 2.99 (2H, ABq, = 16.7, deltanu = 75.6Hz), 1.54(3H, s) ppm5 - chloromethyl 3-furfuryl

- 5-methyl 2-iso oxazoline (3. 1, oil, 65.1) 1 H-NMR (CDCl3) delta: 36 (1H, s) -- 7.26 (2H, s), 4.29 (2H, s), 3.53 (2H, d, J= 2.4Hz), 3.01 (2H, Bq, J= 17.2, deltanu = 76.1Hz) and 1.54(3H, s) ppm5-chloromethyl 3-(3-ril methyl) *- 5-methyl 2-iso oxazoline (3. 15, oil, 19.9) 5 - hloromethyl 3-(2-methyl 3-furil) (methyl) ****- 5-methyl 2-iso cazoline (3. 16) oil and 15.9 -- 5-chloromethyl 5-methyl 3-(2-TENIRU) ***- 2-iso oxazoline (4. 1, oil, 73.8) 1 H-NMR (CDCl3) delta: 7.24-7.21 H, m) -- 7.06-7.03 (1H, m), 6.96-6.91 (1H, m), 4.49 (2H, s), 3.53 (2H, Bq, J= 11.2, deltanu = 7.7Hz), 3.01 (2H, ABq, J= 16.6, deltanu = 5.6Hz), 1.55 (3H, s) ppm are 5-chloromethyl 3-(3, 5-dimethyl 4-iso cazolyl) (methyl) ****- 5-methyl 2-iso oxazoline (5. 18, oil, 40.9) 1 H-MR (CDCl3). delta: 4.00 (2H, s), 3.53 (2H, ABq, J= 11.3, deltanu = 3Hz), 2.99 (2H, ABq, J= 16.8, deltanu = 75.8Hz), 2.39 (3H, s), 2.29 (3H, , a 1.55(3H, s) ppm5-clo Lome ****- 3-(3-methoxy 5-methyl 4-iso cazolyl) (methyl) ****- 5-methyl 2-iso oxazoline (5. 22) mp69-73 and 0.01 H-NMR (CDCl3) delta: 3.99 (3H, s), 3.93 (2H, s), 3.52 (2H, ABq, = 11.2, deltanu = 7.8Hz), 2.99 (2H, ABq, J= 16.7, deltanu = 75.2Hz), 35 (3H, s), 1.54 (3H, s) ppm are 5-chloromethyl 5-methyl 3-(2-methyl 4-iazolyl) (methyl) ****- 2-iso oxazoline (6. 14, oil, 19.5) 1 H-NMR CDCl3). delta: 7.09 (1H, s), 4.32 (2H, s), 3.51 (2H, ABq, J= 11.2, deltanu 7.8Hz), 3.01 (2H, ABq, J= 16.7, deltanu = 75.5Hz), 2.69 (3H, s) and 52 (3H, s) ppm -- 5-chloromethyl 5-methyl 3-(5-thiazolyl methyl) ****-iso oxazoline (6. 25, mp120-121, 7.7) 1 H-NMR (CD) Cl3 delta: 8.73 H, s), 7.83 (1H, s), 4.51 (2H, s), 3.54 (2H, ABq, J= 11.5, deltanu = 4Hz), 3.01 (2H, ABq, J= 16.8, deltanu = 76.1Hz), 1.56 (3H, s) ppm 5-loromethyl 5-methyl 3-(4-methyl 5- (1, 2, 3-thiadiazolyl)) (methyl) ***- 2-iso oxazoline (7. 10, oil, 22.4) 1 H-NMR (CDCl3) delta: 4.45 H, d, J= 1.4Hz), 3.53 (2H, ABq, J= 11.4, deltanu = 6.8Hz), 3.00 (2H, Bq, J= 16.8, deltanu = 77.7Hz), 2.70 (3H, s), 1.54 (3H, s) ppm are 3-(2-enzothiazolyl methyl) ****- 5-chloromethyl 5-methyl 2-iso oxazoline (8. oil, 19.3) 1 H-NMR (CDCl3). delta: 8.0 (1H, d, J= 7.6Hz), 7.87(1H, d, =7.6Hz), 7.52-7.39(2H, m), 4.68(2H, s), 3.54 (2H, ABq, J= 11.2, eltanu=9.8Hz), 3.08 (2H, ABq, J= 16.9, deltanu = 78.9Hz), 1.56 (3H, s) pm are 3-(2-benzofuranyl methyl) ****- 5-chloromethyl 5-methyl 2-iso cazoline (9. 1, oil, 52.5) 1 H-NMR (CDCl3). delta: 7.55-7.43 (2H, m), 31-7.21 (2H, m), 6.71 (1H, s), 4.41 (2H, d, J= 1.0Hz), 3.53 (2H, d, J= 8Hz), 3.03 (2H, ABq, J= 16.8, deltanu = 77.2Hz), 1.55 (3H, s) ppm 0099]

Work example 2]

-chloromethyl 5-methyl 3-(2-pyridyl methyl) sulfonyl 2-iso oxazoline ompound number 1.2) (C-1, C-2 process)

09.1mg of m-chloro perbenzoic acid was added at the room temperature, ssolving and ****(ing) 5-chloromethyl 5-methyl 3-(2-pyridyl methyl) ***- 2-iso oxazoline (compound number 1.1) 145.9mg manufactured by e method of the work example 1 to 1 and 2-dichloroethane 5ml. rthermore, after ****(ing) at a room temperature for 2 hours, the turation sodium sulfite aqueous solution was added to reaction mixture, e methylene chloride extracted, and the organic layer was washed in the dium bicarbonate aqueous solution. After drying with anhydrous sodium

ılfate, it filtered, silica gel column chromatography (hexane: ethyl :etate) refined after distilling off a solvent, and 29.6mg (18.0%) of ɔjects which have a 116 to 117 degree C melting point were obtained. At is time, it is 2-(3- (5-chloromethyl 5-methyl 2-iso oxazolinyl)) sulfonyl ethylpyridine simultaneously. N-oxide (compound number 2.1) 85.7mg 9.5%) was obtained as a crystal which has a 147 to 149 degree C elting point.

)100] 5-chloromethyl 5-methyl 3-(2-pyridyl methyl) sulfonyl 2-iso ɛazoline Compound number 1.21 H-NMR (CDCl3) delta: 8.62 (1H, d, J= 9Hz), 7.84-7.73 (1H, m), 7.51 (1H, d, J= 7.8Hz), 7.34 (1H, q, J= 7.7Hz), 73 (2H, s), 3.61 (2H, ABq, J= 11.4, deltanu = 20.0Hz), 3.20 (2H, ABq, = 17.6, deltanu = 77.0Hz), 1.60(3H, s) ppm2-(3- (5-chloromethyl 5-ethyl 2-iso oxazolinyl)) sulfonyl methylpyridine N-oxide (compound ımber 2.1) 1 H-NMR (CDCl3) delta: 8.25-8.21 (1H, m), 7.62-7.57 (1H,), 7.36-7.31 (2H, m), It manufactures according to the method of 4.92 H, s), 3.71 (2H, ABq, J= 11.3, deltanu = 40.9Hz), 3.43 (2H, ABq, J= 7.4, deltanu = 67.0Hz), and 1.66(3H, s) ppm work examples 2. ******** shown below.

)101] 5-chloromethyl 5-methyl 3-(3-pyridyl methyl) sulfonyl 2-iso ɛazoline (1. 4) mp105-107 and 10.61 H-NMR (CDCl3) delta: 8.66 (2H,), 7.83-7.79 (1H, m), 7.39-7.26 (1H, m), 4.63 (2H, s), 3.55 (2H, ABq, J= 1.7, deltanu = 10.1Hz), 3.16 (2H, ABq, J= 17.8, deltanu = 81.8Hz), 1.55 H, s) ppm5 - chloromethyl 3-furfuryl sulfonyl 5-methyl 2-iso oxazoline . 8, oil, 53.3) 1 H-NMR (CDCl3) delta: 7.52-7.49 (1H, m) and 6.60-6.55 H, m) -- 6.46-6.44 (1H, m), 4.69 (2H, s), 3.57 (2H, d, J= 3.5Hz), 3.12 H, ABq, J= 17.6, deltanu = 82.9Hz) and 1.58(3H, s) ppm5-chloromethyl (3-furil methyl) sulfonyl 5-methyl 2-iso oxazoline (3. 22, mp77-78, 7) 8) 1 H-NMR (CDCl3) delta: 7.55 (1H, s), 7.47 (1H, d, J= 1.6Hz), 6.54 H, d, J= 1.4Hz), 4.48 (2H, s), 3.55 (2H, ABq, J= 11.6, deltanu = 8.5Hz), 17 (2H, ABq, J= 17.7, deltanu = 81.0Hz), [1.56(3H, s) ppm5-ılloromethyl </FONT>-3-(2-methyl 3-furil) (methyl) sulfonyl 5-methyl 2-o oxazoline (3. 23, mp100-103, 45.2) 1 H-NMR (CDCl3)] delta: 7.32 H, d, J= 1.8Hz), 6.43 (1H, d, J= 2.1Hz), 4.39 (2H, s), 3.55 (2H, ABq, J= 1.7, deltanu = 7.9Hz), 3.11 (2H, ABq, J= 17.9, deltanu = 84.4Hz), 2.32 H, s) and 1.56 (3H, s) ppm -- 5-chloromethyl 5-methyl 3-(2-TENIRU) ılfonyl 2-iso oxazoline (4. 8, mp76-78, 88.2) 1 H-NMR (CDCl3) delta : 41(1H, d, J=5.1Hz), 7.15(1H, d, J=3.7Hz), 7.09-7.05 (1H, m), 4.82 (2H, , 3.52 (2H, t, J= 12.3Hz), 3.07 (2H, ABq, J= 17.9, deltanu = 84.2Hz), 54 (3H, s) ppm 5-chloromethyl 3-(3, 5-dimethyl 4-iso oxazolyl) (methyl) ılfonyl 5-methyl 2-iso oxazoline (5. 29, mp142-144, 87.7) 1 H-NMR CDCl3) delta: 4.38 (2H, s), 3.61 (2H, ABq, J= 11.8, deltanu = 14.1Hz), 27 (2H, ABq, J= 17.8, deltanu = 85.7Hz), 2.45 (3H, s), 2.33 (3H, s), 1.60 H, s) ppm 5-chloromethyl 3-(3-methoxy 5-methyl 4-iso oxazolyl) nethyl) sulfonyl 5-methyl 2-iso oxazoline (5. 33, mp114-115, 79.9) 1 H-MR (CDCl3) delta 4.30 (2H, s), 4.01 (3H, s) : 3.59 (2H, d, J= 3.5Hz), 26 (2H, ABq, J= 17.7, deltanu = 85.9Hz), 2.43 (3H, s), 1.60 (3H, s) ppm e 5-chloromethyl 5-methyl 3-(2-methyl 4-thiazolyl) (methyl) sulfonyl 2-o oxazoline (6. 20, mp108-111, 34.6) 1 H-NMR (CDCl3). delta: 7.33 H, s), 4.72 (2H, s), 3.61 (2H, ABq, J= 11.4, deltanu = 16.0Hz), 3.22 (2H,

Bq, J= 17.6, deltanu = 74.5Hz), 2.71 (3H, s) and 1.61 (3H, s) ppm -- 5-
ıloromethyl 5-methyl 3-(5-thiazolyl methyl) sulfonyl 2-iso oxazoline (6.
l, oil, 48.1) 1 H-NMR (CDCl3) delta: 8.89 (1H, s) -- 7.94 (1H, s), 4.89
:H, s), 3.56 (2H, ABq, J= 11.9, deltanu = 10.8Hz), 3.19 (2H, ABq, J=
7.8, deltanu = 82.5Hz), 1.56 (3H) s) ppm5-chloromethyl 5-methyl 3-(4-
ethyl 5- (1, 2, 3-thiadiazolyl)) (methyl) sulfonyl 2-iso oxazoline (7. 13,
p93-95) 83.1) 1 H-NMR (CDCl3) delta: 4.94 (2H, s), 3.59 (2H, ABq, J=
1.9, deltanu = 14.3Hz), 3.24 (2H, ABq, J= 17.8, deltanu = 83.1Hz), 2.78
H, s), 1.58 (3H, s) ppm -- 3-(2-benzothiazolyl methyl) sulfonyl 5-
ıloromethyl 5-methyl 2-iso oxazoline (8. 14, mp136-139, 23.9) 1 H-
MR (CDCl3) delta: 8.07 (1H, d, J= 7.6Hz), 7.93 (1H, dd, J= 6.8, 1.6Hz),
58-7.46 (2H, m), 5.07 (2H, s), 3.61 (2H, ABq, J= 11.7, deltanu =
).4Hz), 3.24 (2H, ABq, J= 17.9, deltanu = 84.4Hz), 1.61(3H, s) ppm3-(2-
:nzofuranyl methyl) sulfonyl 5-chloro Methyl 5-methyl 2-iso oxazoline
'. 17) mp108-110 and 48.81 H-NMR (CDCl3) delta: 7.62-7.48 (2H, m),
35-7.26 (2H, m), 6.95 (1H, s), 4.83 (2H, s), 3.57 (2H, ABq, J= 11.6,
:ltanu = 11.6Hz), 3.17 (2H, ABq, J= 17.8, deltanu = 86.0Hz), 1.57 (3H,
ppm [0102]

:xample(s) of Production]

)103]

'he example 1 of a tablet]

Vettable powder) Pulverization mixture was improved 25% of the
)mpound of the compound number of No. 5.33, 2.5% of the sodium
)decylbenzenesulfonate salt, 2.5% of lignin-sulfonic-acid calcium salt,
ıd 70% of kieselguhr, and wettable powder was obtained.

)104]

'he example 2 of a tablet]

:mulsion) 30% of the compound of the compound number of No. 3.8,
68% of dodecylbenzenesulfonic acid calcium salt, and polyoxyethylene-
kyl-ether 4.92%, 0.4% of polyoxyethylene nonylphenyl ether calcium
ıosphate salt and xylene 62% was mixed well, and the emulsion was
)tained.

)105]

'he example 3 of a tablet]

'ellet) After having improved 5% of lignin-sulfonic-acid calcium salt,
ıd bentonite 20%, and Clay 69% pulverization mixture, adding water and
ıeading together 5% of compound [of the compound number of No.
29], and white carbon 1%, granulation dryness was carried out and the
:llet was obtained.

)106]

'he example 4 of a tablet]

)% of the compound of the compound number of No. 1.4, 1.25% of
)ecial polycarboxylic acid polymerization thing sodium salt, (Hydration
'anulation) 3.75% of water, 3% of sodium dodecylbenzenesulfonate salt,
ıd dextrin 7% and 5% of titanium oxide are mixed, subsequently an air
ill grinds, and water is sprayed [be / it / under / rotation mixer or fluid
:d mixer / adding]. It was made to granulate. When most was set to 1.0
0.15 mm, granulation was taken out, and it applied to the sieve after
'yness. The substance of oversize was ground and granulation of 1.0 to

15 mm was obtained.

)107]

'he example 5 of a tablet]

5 copies of compounds of the compound number of No. 1.2, 0.7 copy of)dium dioctyl sulfosuccinate, (Aqueous suspension) Until solid particles :crease 0.15 copy of propylene glycol, ten copies of lignin-sulfonic-acid ılcium salt, 44.15 copies of water, and ten copies of propylene glycol in ameter of 5 microns or less It ground together in the ball mill, the sand ill, or the roller mill. Ten copies of xanthan gum aqueous solutions were lded to 90 copies of this pulverization slurry 0.05% (W/W), it mixed, and ıueous suspension was obtained.

)108]

:ffect of the Invention] As opposed to tie NUBIE whose compounds of is invention are the strong damage weeds of a paddy field especially in a ıddy field The weeding-out activity excellent in the low dose is shown, ıd there are very few medicals harm over paddy rice, and they have a rong herbicidal action also to cyperaceous weeds, such as broad leaf eeds, such as Monochoria vaginalis, AZENA, ABUNOME, and IKASHIGUSA, and HOTARUI, Ms. GAYATSURI.

)109] Furthermore, receive gramineous weeds, such as a crabgrass, a ırn grass, and a foxtail, also in Hataji. The weeding-out activity excellent the low dose is shown, and there are very few medicals harm over corn, beat, soybeans, and cotton, and they have a strong herbicidal action also broad leaf weeds, such as INUBIYU, goose foot, a cress, and OGEITOU.

)110] The compound (I) of this invention has a herbicidal action, and it ın be used for it as an herbicide. It is stronger for the operation to receive rather than] a monocotyledonous plant to a dicotyledonous plant :nerally. For example, it is carrying out ponding soil treatment of the :rmination front stirrup of weeds after germination in a paddy field, ramineous weeds which are the strong weeds of a paddy field, such as tie UBIE, a HIMETA barn grass, and cay NUBIE, are exterminated :pecially powerfully. Moreover, motorcycle a pine with prevention of the eeding and extermination difficult in the conventional herbicide, OTARUI, clo GUWAI, Alismataceae perennial weeds, such as yperaceae perennial weeds, such as Ms. GAYATSURI, and URIKAWA, ıd OMODAKA, are also exterminable. Furthermore, the broad leaf weed Pontederiaceae weeds, such as Lythraceae weeds, such as :rophulariaceae weeds, such as AZENA, KIKASHIGUSA, IMEMISOHAGI, and Ms. MATSUBA, Monochoria vaginalis, and a [s. holly hock, is also effectively exterminable.

)111] On the other hand to paddy rice, there is an advantage that :lectivity is large, transplant paddy rice does not receive a medical harm ıd its processing application width is large.

)112] moreover, the thing done for soil treatment before germination of eeds in Hataji -- or the thing done for foliage treatment after :rmination, Although Solanaceae weeds, such as Amaranthaceae weeds, ıch as Brassicaceae weeds, such as Chenopodiaceae weeds, such as)ose foot which is Hataji's strong weeds, a lamb's-quarter, and

OAKAZA, and a cress, INUBIYU, AOGEITOU, and INOKOZUCHI, id black nightshade, etc. are effectively exterminable Especially JUBIYU, a crabgrass, KOMEHISHIBA, a foxtail, an AKINO foxtail, eing able to exterminate very powerfully cyperaceous weeds, such as amineous weeds, such as SEIBAMMOTOKOSHI and OOKUSAKIBI, id a yellow purple nutsedge, on the other hand, crops, such as corn, a at, cotton, and soybeans, do not receive a medical harm.

113] Next, the example of a bioassay is given and the effect is shown ncretely.

114]

est Example(s)]

115]

he example 1 of an examination]

)0cm2 of lowland weed germination pretreatments The pot was filled up ith paddy soil and it mixed with the seed of tie NUBIE which carried out rmancy awakening, and HOTARUI at 1cm of surfaces. Moreover, the edling of the paddy rice of two leaf stages was transplanted, and it anged into the ponding state, and was made to raise in a hothouse. nding soil treatment of the predetermined dose was carried out using the ettable powder prepared three days afterward according to the example 1 a tablet, and it investigated in accordance with the acceptance criterion own below 21 days afterward. The result was shown in Table 10.

116] (Acceptance criterion)

Growth control rate 0- 10%1 : Growth control rate 11- 30%2 : Growth ntrol rate 31- 50%3 : Growth control rate 51- 70%4 : Growth control te 71- 90%5 : Growth control rate 91-100% [0117]

he example 2 of an examination]

y the same method as the example 1 of a tie NUBIE 1.5 leaf-stage ocessing examination, ponding soil treatment of the predetermined dose as carried out using the wettable powder prepared at 1.5 leaf stages of tie UBIE according to the example 1 of a tablet, and it investigated 21 days terward. The result was shown in Table 10 (an acceptance criterion is the me as the example 1 of an examination).

118] In addition, in Table 2, there are the comparison compound 1, the mparison compound 2, the comparison compound 3, the comparison mpound 4, a comparison compound 5, and a comparison compound 6, spectively with comparison 1, comparison 2, comparison 3, comparison comparison 5, and comparison 6.

119] The comparison compound 1 is (5-chloromethyl 3-phenyl sulfonyl iso oxazoline), and is a compound Heterocycles, the 22nd volume, No.), and given in the 2187th page (1984).

120] The comparison compound 2 is (3-benzyl ****- 5-cyano 5-methyl iso oxazoline), and is a compound given in JP,H5-105672,A.

121] The comparison compound 3 is (5-cyano 5-methyl 3-(3- ifluoromethylbenzyl) sulfonyl 2-iso oxazoline), and is a compound given JP,H5-105672,A.

122] The comparison compound 4 is (3-(3-pyridyl) ****- 5-cyano 2-iso azoline), and is a compound given in JP,H5-105672,A.

123] The comparison compound 5 is (3-(2-pyridyl) ****- 5-cyano 2-iso

(azoline), and is a compound given in JP,H5-105672,A.
)124] The comparison compound 6 is (3-(2-pyridyl) sulfonyl 5-cyano 2-
o oxazoline), and is a compound given in JP,H5-105672,A.
)125] It is not indicated at all in the above-mentioned literature that these
)mparison compound has weeding-out activity.
)126]
Table 10]
---------- ---------- compound Dose Lowland weed germination
etreatment Tie NUBIE 1.5 leaf-stage processing Number (g/a) TAINU
)ta Paddy rice TAINU Jota Paddy rice Vier Rui Vier Louis
---------- 1.255515501.4555054-2.155 5 0 5 5 0 3.8 5 5 4
5 5 0 3.22 55545503.23 55514504.855545505.29 55545535.33
5545546.20 55 5 2 5 5 0 6.31 5 5 4 0 5 4 0 7.13 55305508.155303309.17
530440 comparison 1 5200000 comparison 2 5200100 comparison 3
)00 - - - Comparison 4 5 0 0 0 - - - Comparison 5 5 000 --- Comparison 6
0 0 0 - - The inside of the - - ---------- ---------- above-mentioned
ble and "-" are un-examining. It is shown.
)127]
The example 3 of an examination]
)cm3 of arviculture weeds germination pretreatments and a 4-cm-deep
quare-shaped pot were filled up with the KUREHA horticulture hilling,
eding of the seed of various sample offering weeds and crops was
rried out, respectively, and it was covered with soil about 1cm. Spraying
ocessing of the predetermined dose was uniformly carried out using the
nulsion prepared according to the example 2 of a tablet in these pots.
he plant was grown for these pots in the greenhouse after processing. In
cordance with the acceptance criterion which shows the medical harm
/er the weeding-out effect and crops to each weeds below, it investigated
1 the 21st after processing. The result was shown in Table 11.
)128] In addition, as for the inside of the following table, and BG, a barn
ass (barnyardgrass) and CR are crabgrasses (crabgrass), SEIBAN
)rghum (johnsongrass) and PA show OOKUSAKIBI (panicum), LA
ows a lamb's-quarter (lambsquarters), and, as for FO, PI shows
OGEITOU (pigweed), respectively, as for a foxtail (foxtail) and JO.
)129] (Acceptance criterion)
Growth control rate 0- 9%1 : growth control rate 10-19%2: Growth
)ntrol rate 20-29%3: Growth control rate 30-39%4: Growth control rate
)-49%5: Growth control rate 50-59%6: Growth control rate 60-69%7:
rowth control rate 70-79%8: Growth control rate 80-89%9: Growth
)ntrol rate 90-99%10: Growth control rate 100% [0130]
Table 11]
---------- --------- compound dose BG CR FO JO PA LA PI
OUMORO Cotton Soybean number (kg/ha) Chewiness
---------- 1.2 2.0 8 9 - 7 10 9 100 0 0 1.4 2.0 10 10 10 10 10
92 0 2 3.8 2.0 10 10 10 10 10 2 93 0 0 3.23 2.0 10 10 - 9 10 0 70 0 0 4.8
0 8 7 9 9 10 10 100 0 0 5.29 2.0 10 10 - 10 10 10 10 0 0 0 5.33 2.0 7 7 -
10 10 100 0 0 6.20 2.0 10 10 - 10 10 9 100 0 0 6.31 2.0 10 9 10 9 10 10
)0 0 0 9.17 2.0 10 10 10 10 10 9 9 0 0 Inside of the 0 ----------
-------- Above-mentioned Table and "-" are Un-Examining. It is shown.

)131]
The example 4 of an examination]
)cm3 of arviculture foliage treatment and a 4-cm-deep square-shaped pot ere filled up with the KUREHA horticulture hilling, seeding of the seed various sample offering weeds and crops was carried out, respectively, id it was covered with soil about 1cm. The plant was grown for these ots in the greenhouse. When each plant reached at two to 3 leaf stage fter-seeding ten days), spraying processing of the predetermined dose as uniformly carried out at the leave and stem using the emulsion epared in these pots according to the example 2 of a tablet. The medical rm over the weeding-out effect and crops to each weeds was vestigated after processing on the 14th. The result was shown in Table 2 (an acceptance criterion and a cable address are the same as the ample 3 of an examination).
)132]
Table 12]
---------- --------- compound Dose FO JO PA PI TOUMORO
otton Soybean number (kg/ha) Chewiness ---------- 3.8 2.0
) 9 7 10 0 2 1 ----------

Translation done.]

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